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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/485,434	04/14/00	BERGHOF	C 2727-100J

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EXAMINER	
SQUAYA, J	
ART UNIT	**PAPER NUMBER**
1655	10

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/485,434	Applicant(s) Berghof et al
	Examiner Jehanne Souaya	Group Art Unit 1655

☒ Responsive to communication(s) filed on *Apr 14, 2000* .

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-21* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-21* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____ .

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

✓ Notice to Comply

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Nucleotide Sequences

This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 C.F.R. § 1.821(a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 C.F.R. §§ 1.821-1.825 for the reason(s) set forth on the attached Notice To Comply With Requirements For Patent Applications Containing Nucleotide Sequence And/Or Amino Acid Sequence Disclosures. Specifically, claim 5 refers to a specific SEQ ID NO that is not present in applicant's nucleotide sequence listing.

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 18-21 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with idiomatic errors. The claims should be rewritten to conform to claim language used in US practice. For instance, all claims lack an article at the beginning of the claims, such that the claims should recite "A set..." or "A composition" or "A kit".

The claims are indefinite in the recitation of "deriving" as it is unclear what is encompassed by a nucleic acid sequence that is derived from another nucleic acid. The metes and bounds of the claim are unclear in that it cannot be determined what a resulting nucleic acid would look like were it "derived" from another nucleic acid. For instance, could all the nucleotides in the sequence be different from the original nucleic acid and still be "derived" from that nucleic acid.

The claims (for example claim 1, step g; claim 2, step f...) are indefinite in the recitation of "in a region of at least 10 successive nucleotides of their nucleotide chains, corresponds to less than 100% but to at least 80% of the base sequence" as it is unclear as to which base sequence

this corresponds to. That is, due to the general indefiniteness of the claim language, it cannot be determined which sequence will be used to obtain a nucleic acid that "corresponds to less than 100% but to at least 80%...". The claim appears to be replete with terms that lack antecedent basis.

Claim 3 is indefinite in the recitation of "complementing" primers as it is unclear if the primers are complements of each other or of a if the primers are exactly complementary to some specific nucleic acid sequence.

Claim 5 is indefinite as it is unclear which SEQ ID NO is being referred to. Applicant should note that claim 5 is also unsearchable with regard to current US practice. The examiner cannot search nucleic acid molecules that are fragments of a specific SEQ ID NO that is not in the PTO database. See attached "Notice to Comply".

Claim 13 is indefinite in the recitation of the phrase "building blocks known per se as probes and/or primers" as it is unclear how this claim further limits the invention. The term "building blocks" in relation to probes and primers is not an art recognized term and it cannot be determined from the claim language what limitations should be attributed to claim 13. It is further unclear how the nucleic acid molecule in claim 13 is "modified".

Claims 18-21 provide for the use of a set of nucleic acids, but, since the claims do not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Applicants are urged to contact the examiner for assistance in amending the claims to conform to current US practice. The examiner has enclosed a sample preamble for applicants use in redrafting the claims to conform to current US practice.

Suggested claim preamble:

--A set of isolated nucleic acid molecules which comprises nucleic acid sequences that distinguish between all of the following subspecies of *Salmonella enterica*, subspecies: *enterica, salamae, arizonae, diarizonae, houtenai, bongori*, and *indica* wherein the nucleic acid molecules are characterized by...--

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was

made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holmes et al (WO95/00664).

As the claims have been rejected under § 112/2nd paragraph as being generally narrative and indefinite, the examiner's interpretation of the claims is set forth. The claims are drawn to isolated nucleic acid molecules that can distinguish between the following *Salmonella enterica* subspecies: *enterica, salamae, arizonae, diarizonae, houtenai, bongori*, and *indica*. The nucleic acid molecules are characterized in that the sequences of each subspecies have been aligned to determine regions of similarity and variability to design primers and probes that universally hybridize to a number of subspecies and specifically hybridize to a certain subspecies and not to other subspecies, thereby identifying nucleic acid samples as containing *Salmonella enterica* and further distinguishing each subspecies through PCR amplification or hybridization.

Holmes teaches an invention which provides nucleic acid molecules for the detection and identification of *Salmonella* species, and for detecting one or more *Salmonella* serotypes and to kits comprising these nucleic acid molecules (see abstract). Holmes teaches a need for detecting *Salmonella* because the incidence of salmonellosis has increased significantly during the last two decades in western countries and that while standard culture methods are still widely used for detection of *Salmonella* in foods, the control of infection depends on the availability of rapid and

precise tests for monitoring of primary animal production (see p. 1). Holmes teaches that nucleic acid based methods for detection of a DNA or RNA from a target organism have proliferated and that the invention of Holmes is based on using certain fragments of the *Salmonella typhimurium* LT2 chromosome (or corresponding nucleic acid fragments having the same sequence of bases, including RNA, PNA, etc) as primers in PCR and other amplification systems, in particular certain fragments corresponding to regions of the genome which are highly conserved in *Salmonella* species (see paragraph bridging pages 2 and 3). Holmes further teaches that fragments to conserved regions are useful in detecting and identifying *Salmonella* species generally, while fragments from less conserved regions are useful for identifying infections from different serotypes of *Salmonella* (see p. 3). Holmes teaches using 146 *Salmonella* strains (table 2) and 82 non *Salmonella Enterobacteriaceae* strains (table 3). Holmes further teaches that 8 oligonucleotide sequences were selected from the sequence and tested for their ability to discriminate between *Salmonella* and non *Salmonella* bacteria and teaches various results in the primer pairs ability to identify and distinguish *Salmonella* form non *Salmonella* bacteria and form different serotypes of *Salmonella* (see p. 14, 15, and table 1,2 and 3, examples 1 and 2). Holmes specifically teaches evaluation of a *Salmonella* specific PCR assay and the detection of *enterica, salamae, arizonae, diarizonae, houtenai, bongori,* and *indica* and teaches application of the general method in the detection of *Salmonella* in pork and beef (example 3). Holmes teaches kits containing these nucleic acid primers and probes for use in the method taught by Holmes. It is

also noted that the sequences of SEQ ID NOS 1, 3, 6, and 9 are found in SEQ ID NO 1, taught by Holmes.

Although Holmes does not teach the exact nucleic acid molecules "consisting" of the SEQ ID Nos taught in claim 8, Holmes provide motivation for the skilled artisan to construct the sequences of claim 8 and the sequences encompassed by the broadly claimed invention. Therefore it would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to construct sequences as Holmes teaches how to construct nucleic acid molecules for the purpose of detecting different serotypes of *Salmonella*. The ordinary artisan would have been motivated to construct such nucleic acid molecules as Holmes teaches a need for the detection and differentiation of *Salmonella* for the purposes of controlling infection caused by *Salmonella*.

It should be noted that the state of the art was very high at the time the invention was filed to construct probes and primers for the detection and differentiation of different strains of closely related bacteria and fungi. For example, a number of US patents were given to Hogan et al (5,714,321 is enclosed) to methods and nucleic acids for detecting and differentiating different strains of bacteria. A large number of references were available, at the time the invention was made, that taught the ordinary artisan how to align sequences of bacteria to determine regions of similarity and variability to detect and differentiate different strains of bacteria. As the strains and subspecies of the bacteria were known and available in the art at the time of filing, it would have been prima facie obvious to one of ordinary skill to align the sequences of different subspecies of *Salmonella* for the purpose of providing nucleic acids for detecting and differentiating different

subspecies of *Salmonella*. A showing of unexpected results, however, could overcome this rejection. Evidence that certain primers or probes worked better than others would constitute unexpected results, and therefore, those *specific* probes and primers would be patentable over the disclosure of Holmes and the general high state of the art.

6. No claims are allowable.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Jehanne Souaya whose telephone number is (703)308-6565. The examiner can normally be reached Monday-Thursday from 7:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jones, can be reached on (703) 308-1152. The fax phone number for this Group is (703) 305-3014.

Any inquiry of a general nature should be directed to the Group receptionist whose telephone number is (703) 308-0196.

W. Gary Jones
Supervisory Patent Examiner
Technology Center 1600
9/12/01

Jehanne Souaya
Jehanne Souaya
Patent examiner
March 9, 2001